



SEQUENCE LISTING

<110> Georgopoulos, Katia
Morgan, Bruce A.

<120> AIOLOS GENE

<130> 10287-031001

<140> US 09/019,348

<141> 1998-02-05

<150> US 08/733,622

<151> 1996-10-17

<150> US 60/017,646

<151> 1996-05-14

<150> US 60/005,529

<151> 1995-10-18

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tccccacggc agcagcacgt ggagcggccg cggagcctga gcgacagctg cagccccgcg 360
ggccccgggc gac atg gaa gat ata caa ccg act gtg gag ctg aaa agc 409
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1 5 10

acg gag gag cag cct ctg ccc aca gag agc cca gac gct ctg aat gac 457
Thr Glu Glu Gln Pro Leu Pro Thr Glu Ser Pro Asp Ala Leu Asn Asp
15 20 25

tac agc ttg ccc aaa cct cat gag ata gaa aac gtg gac agt aga gaa 505
Tyr Ser Leu Pro Lys Pro His Glu Ile Glu Asn Val Asp Ser Arg Glu
30 35 40

gcc cca gcc aat gaa gac gaa gat gca gga gaa gat tcg atg aaa gtg 553
Ala Pro Ala Asn Glu Asp Glu Asp Ala Gly Glu Asp Ser Met Lys Val

45	50	55	60	
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Lys Asp Glu Tyr Ser Asp Arg Asp Glu Asn Ile Met Lys Pro Glu Pro				
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atg gga gat gca gaa gag agt gaa atg cct tac agc tat gca aga gaa				649
Met Gly Asp Ala Glu Glu Ser Glu Met Pro Tyr Ser Tyr Ala Arg Glu				
	80	85	90	
tac agc gac tat gaa agc att aag ctg gag aga cac gtg ccc tat gac				697
Tyr Ser Asp Tyr Glu Ser Ile Lys Leu Glu Arg His Val Pro Tyr Asp				
	95	100	105	
aac agc aga cca acc agt ggg aag atg aac tgc gac gtg tgc ggg tta				745
Asn Ser Arg Pro Thr Ser Gly Lys Met Asn Cys Asp Val Cys Gly Leu				
	110	115	120	
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Ser Cys Ile Ser Phe Asn Val Leu Met Val His Lys Arg Ser His Thr				
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ggc gaa cgc ccg ttc cag tgt aat cag tgc ggg gca tct ttt act cag				841
Gly Glu Arg Pro Phe Gln Cys Asn Gln Cys Gly Ala Ser Phe Thr Gln				
	145	150	155	
aaa ggt aac ctc ctc cgt cat att aaa ctg cac acg ggg gaa aaa cct				889
Lys Gly Asn Leu Leu Arg His Ile Lys Leu His Thr Gly Glu Lys Pro				
	160	165	170	
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Phe Lys Cys His Leu Cys Asn Tyr Ala Cys Gln Arg Arg Asp Ala Leu				
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acg gga cac ctt agg aca cat tct gtg gag aag ccg tac aag tgt gag				985
Thr Gly His Leu Arg Thr His Ser Val Glu Lys Pro Tyr Lys Cys Glu				
	190	195	200	
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Phe Cys Gly Arg Ser Tyr Lys Gln Arg Ser Ser Leu Glu Glu His Lys				
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Glu Arg Cys Arg Ala Phe Leu Gln Asn Pro Asp Leu Gly Asp Ala Ala				
	225	230	235	
agt gtg gag gca aga cac atc aaa gcc gag atg gga agt gag aga gct				1129
Ser Val Glu Ala Arg His Ile Lys Ala Glu Met Gly Ser Glu Arg Ala				
	240	245	250	
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Leu Val Leu Asp Arg Leu Ala Ser Asn Val Ala Lys Arg Lys Ser Ser				
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atg cct cag aaa ttc atc ggt gag aag cgg cac tgc ttc gat gcc aac				1225
Met Pro Gln Lys Phe Ile Gly Glu Lys Arg His Cys Phe Asp Ala Asn				
	270	275	280	

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Arg Met Met Asp Gln Ala Ile Asn Asn Ala Ile Ser Tyr Leu Gly Ala	
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gaa gcc ttc cgc ccc tta gtc cag act ccg cct gct ccc acc tct gag	1369
Glu Ala Phe Arg Pro Leu Val Gln Thr Pro Pro Ala Pro Thr Ser Glu	
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Met Val Pro Val Ile Ser Ser Val Tyr Pro Ile Ala Leu Thr Arg Ala	
335 340 345	
gat atg cca atg ggg gcc ccg cag gag atg gaa aag aaa cgg atc ctc	1465
Asp Met Pro Met Gly Ala Pro Gln Glu Met Glu Lys Lys Arg Ile Leu	
350 355 360	
ctg cca gag aag atc ttg cct tct gaa cga ggt ctg tcc ccc aat aac	1513
Leu Pro Glu Lys Ile Leu Pro Ser Glu Arg Gly Leu Ser Pro Asn Asn	
365 370 375 380	
agt gcc cag gac tcc aca gac acc gac agc aac cac gag gat cgc caa	1561
Ser Ala Gln Asp Ser Thr Asp Thr Asp Ser Asn His Glu Asp Arg Gln	
385 390 395	
cat ctc tac cag caa agc cac gtg gtc ctc ccc cag gcc cgc aat ggg	1609
His Leu Tyr Gln Gln Ser His Val Val Leu Pro Gln Ala Arg Asn Gly	
400 405 410	
atg cct ctt ctg aag gag gtc cct cgc tct ttt gaa ctc ctc aag ccc	1657
Met Pro Leu Leu Lys Glu Val Pro Arg Ser Phe Glu Leu Leu Lys Pro	
415 420 425	
cct ccc atc tgc ctg agg gac tcc atc aaa gtg atc aac aaa gaa ggg	1705
Pro Pro Ile Cys Leu Arg Asp Ser Ile Lys Val Ile Asn Lys Glu Gly	
430 435 440	
gag gtg atg gat gtg ttt cga tgt gac cac tgc cac gtc ctc ttc cta	1753
Glu Val Met Asp Val Phe Arg Cys Asp His Cys His Val Leu Phe Leu	
445 450 455 460	
gat tat gtg atg ttc acc atc cac atg ggg tgc cat ggt ttc cgt gat	1801
Asp Tyr Val Met Phe Thr Ile His Met Gly Cys His Gly Phe Arg Asp	
465 470 475	
ccc ttt gag tgt aac atg tgt ggc tat cga agc cac gat cgc tat gag	1849
Pro Phe Glu Cys Asn Met Cys Gly Tyr Arg Ser His Asp Arg Tyr Glu	
480 485 490	
ttc tcc tct cac atc gcc aga gga gag cac aga gcc atg ttg aag	1894
Phe Ser Ser His Ile Ala Arg Gly Glu His Arg Ala Met Leu Lys	
495 500 505	

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35 40 45
Glu Asp Glu Asp Ala Gly Glu Asp Ser Met Lys Val Lys Asp Glu Tyr
50 55 60
Ser Asp Arg Asp Glu Asn Ile Met Lys Pro Glu Pro Met Gly Asp Ala
65 70 75 80
Glu Glu Ser Glu Met Pro Tyr Ser Tyr Ala Arg Glu Tyr Ser Asp Tyr
85 90 95
Glu Ser Ile Lys Leu Glu Arg His Val Pro Tyr Asp Asn Ser Arg Pro
100 105 110
Thr Ser Gly Lys Met Asn Cys Asp Val Cys Gly Leu Ser Cys Ile Ser
115 120 125
Phe Asn Val Leu Met Val His Lys Arg Ser His Thr Gly Glu Arg Pro
130 135 140
Phe Gln Cys Asn Gln Cys Gly Ala Ser Phe Thr Gln Lys Gly Asn Leu
145 150 155 160
Leu Arg His Ile Lys Leu His Thr Gly Glu Lys Pro Phe Lys Cys His
165 170 175
Leu Cys Asn Tyr Ala Cys Gln Arg Arg Asp Ala Leu Thr Gly His Leu
180 185 190
Arg Thr His Ser Val Glu Lys Pro Tyr Lys Cys Glu Phe Cys Gly Arg
195 200 205
Ser Tyr Lys Gln Arg Ser Ser Leu Glu Glu His Lys Glu Arg Cys Arg
210 215 220
Ala Phe Leu Gln Asn Pro Asp Leu Gly Asp Ala Ala Ser Val Glu Ala
225 230 235 240
Arg His Ile Lys Ala Glu Met Gly Ser Glu Arg Ala Leu Val Leu Asp
245 250 255
Arg Leu Ala Ser Asn Val Ala Lys Arg Lys Ser Ser Met Pro Gln Lys
260 265 270
Phe Ile Gly Glu Lys Arg His Cys Phe Asp Ala Asn Tyr Asn Pro Gly
275 280 285
Tyr Met Tyr Glu Lys Glu Asn Glu Met Met Gln Thr Arg Met Met Asp
290 295 300
Gln Ala Ile Asn Asn Ala Ile Ser Tyr Leu Gly Ala Glu Ala Phe Arg
305 310 315 320
Pro Leu Val Gln Thr Pro Pro Ala Pro Thr Ser Glu Met Val Pro Val
325 330 335
Ile Ser Ser Val Tyr Pro Ile Ala Leu Thr Arg Ala Asp Met Pro Met
340 345 350
Gly Ala Pro Gln Glu Met Glu Lys Lys Arg Ile Leu Leu Pro Glu Lys
355 360 365
Ile Leu Pro Ser Glu Arg Gly Leu Ser Pro Asn Asn Ser Ala Gln Asp
370 375 380

Ser Thr Asp Thr Asp Ser Asn His Glu Asp Arg Gln His Leu Tyr Gln
 385 390 395 400
 Gln Ser His Val Val Leu Pro Gln Ala Arg Asn Gly Met Pro Leu Leu
 405 410 415
 Lys Glu Val Pro Arg Ser Phe Glu Leu Leu Lys Pro Pro Pro Ile Cys
 420 425 430
 Leu Arg Asp Ser Ile Lys Val Ile Asn Lys Glu Gly Glu Val Met Asp
 435 440 445
 Val Phe Arg Cys Asp His Cys His Val Leu Phe Leu Asp Tyr Val Met
 450 455 460
 Phe Thr Ile His Met Gly Cys His Gly Phe Arg Asp Pro Phe Glu Cys
 465 470 475 480
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 Ile Ala Arg Gly Glu His Arg Ala Met Leu Lys
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23

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21

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gag cct gaa atc cct tac agc tat tca aga gaa tat aat gaa tat gaa 96
Glu Pro Glu Ile Pro Tyr Ser Tyr Ser Arg Glu Tyr Asn Glu Tyr Glu
20 25 30

aac att aag ttg gag aga cat gtt gtc tca ttc gat agt agc agg cca 144
Asn Ile Lys Leu Glu Arg His Val Val Ser Phe Asp Ser Ser Arg Pro
35 40 45

acc agt gga aag atg aac tgc gat gtg tgt gga tta tcc tgc atc agc 192
Thr Ser Gly Lys Met Asn Cys Asp Val Cys Gly Leu Ser Cys Ile Ser
50 55 60

ttc aat gtc tta atg gtt cat aag cga agc cat act ggt gaa cgc cca 240
Phe Asn Val Leu Met Val His Lys Arg Ser His Thr Gly Glu Arg Pro
65 70 75 80

ttc cag tgt aat cag tgt ggg gca tct ttt act cag aaa ggt aac ctc 288
Phe Gln Cys Asn Gln Cys Gly Ala Ser Phe Thr Gln Lys Gly Asn Leu
85 90 95

ctc cgc cac att aaa ctg cac aca ggg gaa aaa cct ttt aag tgt cac 336
Leu Arg His Ile Lys Leu His Thr Gly Glu Lys Pro Phe Lys Cys His
100 105 110

ctc tgc aac tat gca tgc caa aga aga gat gcg ctc acg ggg cat ctt 384
Leu Cys Asn Tyr Ala Cys Gln Arg Arg Asp Ala Leu Thr Gly His Leu
115 120 125

agg aca cat tct gtg gag aaa ccc tac aaa tgt gag ttt tgt gga agg 432
Arg Thr His Ser Val Glu Lys Pro Tyr Lys Cys Glu Phe Cys Gly Arg
130 135 140

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Ser Tyr Lys Gln Arg Ser Ser Leu Glu Glu His Lys Glu Arg Cys Arg
145 150 155 160

aca ttt ctt cag agc act gac cca ggg gac act gca agt gcg gag gca 528
Thr Phe Leu Gln Ser Thr Asp Pro Gly Asp Thr Ala Ser Ala Glu Ala
165 170 175

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 Arg His Ile Lys Ala Glu Met Gly Ser Glu Arg Ala Leu Val Leu Asp
 180 185 190

aga tta gca agc aat gtg gca aaa cga aaa agc tca atg cct cag aaa 624
 Arg Leu Ala Ser Asn Val Ala Lys Arg Lys Ser Ser Met Pro Gln Lys
 195 200 205

ttc a 628
 Phe

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 <213> Homo sapiens

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 35 40 45
 Thr Ser Gly Lys Met Asn Cys Asp Val Cys Gly Leu Ser Cys Ile Ser
 50 55 60
 Phe Asn Val Leu Met Val His Lys Arg Ser His Thr Gly Glu Arg Pro
 65 70 75 80
 Phe Gln Cys Asn Gln Cys Gly Ala Ser Phe Thr Gln Lys Gly Asn Leu
 85 90 95
 Leu Arg His Ile Lys Leu His Thr Gly Glu Lys Pro Phe Lys Cys His
 100 105 110
 Leu Cys Asn Tyr Ala Cys Gln Arg Arg Asp Ala Leu Thr Gly His Leu
 115 120 125
 Arg Thr His Ser Val Glu Lys Pro Tyr Lys Cys Glu Phe Cys Gly Arg
 130 135 140
 Ser Tyr Lys Gln Arg Ser Ser Leu Glu Glu His Lys Glu Arg Cys Arg
 145 150 155 160
 Thr Phe Leu Gln Ser Thr Asp Pro Gly Asp Thr Ala Ser Ala Glu Ala
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 Arg His Ile Lys Ala Glu Met Gly Ser Glu Arg Ala Leu Val Leu Asp
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 195 200 205
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<210> 9
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer for PCR

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 <210> 10
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 <220>
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 <220>
 <223> probe for EMSA

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 <210> 12
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 <400> 13
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<220>
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 <222> (223)...(1515)

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 ttggccttgg ggaggcacaa gtctgttgat aacctgaaga ca atg gat gtc gat 234
 Met Asp Val Asp
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gag ggt caa gac atg tcc caa gtt tca gga aag gag agc ccc cca gtc 282
 Glu Gly Gln Asp Met Ser Gln Val Ser Gly Lys Glu Ser Pro Pro Val
 5 10 15 20

agt gac act cca gat gaa ggg gat gag ccc atg cct gtc cct gag gac 330
 Ser Asp Thr Pro Asp Glu Gly Asp Glu Pro Met Pro Val Pro Glu Asp
 25 30 35

ctg tcc act acc tct gga gca cag cag aac tcc aag agt gat cga ggc 378
 Leu Ser Thr Thr Ser Gly Ala Gln Gln Asn Ser Lys Ser Asp Arg Gly
 40 45 50

atg ggt gaa cgg cct ttc cag tgc aac cag tct ggg gcc tcc ttt acc 426
 Met Gly Glu Arg Pro Phe Gln Cys Asn Gln Ser Gly Ala Ser Phe Thr
 55 60 65

cag aaa ggc aac ctc ctg cgg cac atc aag ctg cac tcg ggt gag aag 474
 Gln Lys Gly Asn Leu Leu Arg His Ile Lys Leu His Ser Gly Glu Lys
 70 75 80

ccc ttc aaa tgc cat ctt tgc aac tat gcc tgc cgc cgg agg gac gcc 522
 Pro Phe Lys Cys His Leu Cys Asn Tyr Ala Cys Arg Arg Arg Asp Ala
 85 90 95 100

ctc acc ggc cac ctg agg acg cac tcc gtt ggt aag cct cac aaa tgt 570
 Leu Thr Gly His Leu Arg Thr His Ser Val Gly Lys Pro His Lys Cys
 105 110 115

gga tat tgt ggc cgg agc tat aaa cag cga agc tct tta gag gag cat 618
 Gly Tyr Cys Gly Arg Ser Tyr Lys Gln Arg Ser Ser Leu Glu Glu His
 120 125 130

aaa gag cga tgc cac aac tac ttg gaa agc atg ggc ctt ccg ggc gtg 666
 Lys Glu Arg Cys His Asn Tyr Leu Glu Ser Met Gly Leu Pro Gly Val
 135 140 145

tgc cca gtc att aag gaa gaa act aac cac aac gag atg gca gaa gac 714
 Cys Pro Val Ile Lys Glu Glu Thr Asn His Asn Glu Met Ala Glu Asp
 150 155 160

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gcc ttc cgt gtg gtc agc acg agt ggc gag cag ctg aag gtg tac aag Ala Phe Arg Val Val Ser Thr Ser Gly Glu Gln Leu Lys Val Tyr Lys 360 365 370	1338
tgc gaa cac tgc cgc gtg ctc ttc ctg gat cac gtc atg tat acc att Cys Glu His Cys Arg Val Leu Phe Leu Asp His Val Met Tyr Thr Ile 375 380 385	1386

cac atg ggc tgc cat ggc tgc cat ggc ttt cgg gat ccc ttt gag tgt	1434
His Met Gly Cys His Gly Cys His Gly Phe Arg Asp Pro Phe Glu Cys	
390 395 400	

aac atg tgt ggt tat cac agc cag gac agg tac gag ttc tca tcc cat	1482
Asn Met Cys Gly Tyr His Ser Gln Asp Arg Tyr Glu Phe Ser Ser His	
405 410 415 420	

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Ile Thr Arg Gly Glu His Arg Tyr His Leu Ser	
425 430	

tgaagcacia agatagctgg ttatgcctcc ttcccggcag ctggacccac agcggacaat	1595
gtgggagtgg atttgcaggc agcatttggt cttttatggt gggtgtttgg cgtttcattt	1655
gcgttgaag ataagttttt aatgttagtg acaggattgc attgcatcag caacattcac	1715
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<220>
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 <222> (1)...(1383)

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Glu Met Asn Gly Glu Glu Cys Ala Glu Asp Leu Arg Met Leu Asp Ala	
20 25 30	

tcg gga gag aaa atg aat ggc tcc cac agg gac caa ggc agc tcg gct	144
Ser Gly Glu Lys Met Asn Gly Ser His Arg Asp Gln Gly Ser Ser Ala	
35 40 45	

ttg tcg gga gtt gga ggc att cga ctt cct aac gga aaa cta aag tgt	192
Leu Ser Gly Val Gly Gly Ile Arg Leu Pro Asn Gly Lys Leu Lys Cys	
50 55 60	

gat atc tgt ggg atc att tgc atc ggg ccc aat gtg ctc atg gtt cac	240
Asp Ile Cys Gly Ile Ile Cys Ile Gly Pro Asn Val Leu Met Val His	
65 70 75 80	

aaa aga agc cac act gga gaa cgg ccc ttc cag tgc aat cag tgc ggg	288
Lys Arg Ser His Thr Gly Glu Arg Pro Phe Gln Cys Asn Gln Cys Gly	
85 90 95	

gcc tca ttc acc cag aag ggc aac ctg ctc cgg cac atc aag ctg cat	336
Ala Ser Phe Thr Gln Lys Gly Asn Leu Leu Arg His Ile Lys Leu His	
100 105 110	

tcc ggg gag aag ccc ttc aaa tgc cac ctc tgc aac tac gcc tgc cgc	384
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Ser	Gly	Glu	Lys	Pro	Phe	Lys	Cys	His	Leu	Cys	Asn	Tyr	Ala	Cys	Arg	
		115					120					125				
cgg	agg	gac	gcc	ctc	act	ggc	cac	ctg	agg	acg	cac	tcc	gtt	ggc	aaa	432
Arg	Arg	Asp	Ala	Leu	Thr	Gly	His	Leu	Arg	Thr	His	Ser	Val	Gly	Lys	
	130					135					140					
cct	cac	aaa	tgt	gga	tat	tgt	ggc	cga	agc	tat	aaa	cag	cga	acg	tct	480
Pro	His	Lys	Cys	Gly	Tyr	Cys	Gly	Arg	Ser	Tyr	Lys	Gln	Arg	Thr	Ser	
145					150					155					160	
tta	gag	gaa	cat	aaa	gag	cgc	tgc	cac	aac	tac	ttg	gaa	agc	atg	ggc	528
Leu	Glu	Glu	His	Lys	Glu	Arg	Cys	His	Asn	Tyr	Leu	Glu	Ser	Met	Gly	
				165					170						175	
ctt	ccg	ggc	aca	ctg	tac	cca	gtc	att	aaa	gaa	gaa	act	aag	cac	agt	576
Leu	Pro	Gly	Thr	Leu	Tyr	Pro	Val	Ile	Lys	Glu	Glu	Thr	Lys	His	Ser	
			180					185					190			
gaa	atg	gca	gaa	gac	ctg	tgc	aag	ata	gga	tca	gag	aga	tct	ctc	gtg	624
Glu	Met	Ala	Glu	Asp	Leu	Cys	Lys	Ile	Gly	Ser	Glu	Arg	Ser	Leu	Val	
	195					200						205				
ctg	gac	aga	cta	gca	agt	aat	gtc	gcc	aaa	cgt	aag	agc	tct	atg	cct	672
Leu	Asp	Arg	Leu	Ala	Ser	Asn	Val	Ala	Lys	Arg	Lys	Ser	Ser	Met	Pro	
	210					215					220					
cag	aaa	ttt	ctt	ggg	gac	aag	ggc	ctg	tcc	gac	acg	ccc	tac	gac	agt	720
Gln	Lys	Phe	Leu	Gly	Asp	Lys	Gly	Leu	Ser	Asp	Thr	Pro	Tyr	Asp	Ser	
225				230						235					240	
gcc	acg	tac	gag	aag	gag	aac	gaa	atg	atg	aag	tcc	cac	gtg	atg	gac	768
Ala	Thr	Tyr	Glu	Lys	Glu	Asn	Glu	Met	Met	Lys	Ser	His	Val	Met	Asp	
				245					250					255		
caa	gcc	atc	aac	aac	gcc	atc	aac	tac	ctg	ggg	gcc	gag	tcc	ctg	cgc	816
Gln	Ala	Ile	Asn	Asn	Ala	Ile	Asn	Tyr	Leu	Gly	Ala	Glu	Ser	Leu	Arg	
			260					265					270			
ccg	ctg	gtg	cag	acg	ccc	ccg	ggc	ggc	tcc	gag	gtg	gtc	ccg	gtc	atc	864
Pro	Leu	Val	Gln	Thr	Pro	Pro	Gly	Gly	Ser	Glu	Val	Val	Pro	Val	Ile	
	275						280					285				
agc	ccg	atg	tac	cag	ctg	cac	agg	cgc	tcg	gag	ggc	acc	ccg	cgc	tcc	912
Ser	Pro	Met	Tyr	Gln	Leu	His	Arg	Arg	Ser	Glu	Gly	Thr	Pro	Arg	Ser	
	290					295					300					
aac	cac	tcg	gcc	cag	gac	agc	gcc	gtg	gag	tac	ctg	ctg	ctg	ctc	tcc	960
Asn	His	Ser	Ala	Gln	Asp	Ser	Ala	Val	Glu	Tyr	Leu	Leu	Leu	Leu	Ser	
305				310					315						320	
aag	gcc	aag	ttg	gtg	ccc	tcg	gag	cgc	gag	gcg	tcc	ccg	agc	aac	agc	1008
Lys	Ala	Lys	Leu	Val	Pro	Ser	Glu	Arg	Glu	Ala	Ser	Pro	Ser	Asn	Ser	
				325					330					335		
tgc	caa	gac	tcc	acg	gac	acc	gag	agc	aac	aac	gag	gag	cag	cgc	agc	1056
Cys	Gln	Asp	Ser	Thr	Asp	Thr	Glu	Ser	Asn	Asn	Glu	Glu	Gln	Arg	Ser	

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ggt ctt atc tac ctg acc aac cac atc gcc cga cgc gcg caa cgc gtg			1104
Gly Leu Ile Tyr Leu Thr Asn His Ile Ala Arg Arg Ala Gln Arg Val			
355	360	365	
tcg ctc aag gag gag cac cgc gcc tac gac ctg ctg cgc gcc gcc tcc			1152
Ser Leu Lys Glu Glu His Arg Ala Tyr Asp Leu Leu Arg Ala Ala Ser			
370	375	380	
gag aac tcg cag gac gcg ctc cgc gtg gtc agc acc agc ggg gag cag			1200
Glu Asn Ser Gln Asp Ala Leu Arg Val Val Ser Thr Ser Gly Glu Gln			
385	390	395	400
atg aag gtg tac aag tgc gaa cac tgc cgg gtg ctc ttc ctg gat cac			1248
Met Lys Val Tyr Lys Cys Glu His Cys Arg Val Leu Phe Leu Asp His			
405	410	415	
gtc atg tac acc atc cac atg ggc tgc cac ggc ttc cgt gat cct ttt			1296
Val Met Tyr Thr Ile His Met Gly Cys His Gly Phe Arg Asp Pro Phe			
420	425	430	
gag tgc aac atg tgc ggc tac cac agc cag gac cgg tac gag ttc tcg			1344
Glu Cys Asn Met Cys Gly Tyr His Ser Gln Asp Arg Tyr Glu Phe Ser			
435	440	445	
tcg cac ata acg cga ggg gag cac cgc ttc cac atg agc taa			1386
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agc ccc cca gtc agt gac act cca gat gaa ggg gat gag ccc atg cct	96
Ser Pro Pro Val Ser Asp Thr Pro Asp Glu Gly Asp Glu Pro Met Pro	
20 25 30	
gtc cct gag gac ctg tcc act acc tct gga gca cag cag aac tcc aag	144
Val Pro Glu Asp Leu Ser Thr Thr Ser Gly Ala Gln Gln Asn Ser Lys	
35 40 45	
agt gat cga ggc atg gcc agt aat gtt aaa gta gag act cag agt gat	192
Ser Asp Arg Gly Met Ala Ser Asn Val Lys Val Glu Thr Gln Ser Asp	
50 55 60	

gaa gag aat ggg cgt gcc tgt gaa atg aat ggg gaa gaa tgt gca gag	240
Glu Glu Asn Gly Arg Ala Cys Glu Met Asn Gly Glu Glu Cys Ala Glu	
65 70 75 80	
gat tta cga atg ctt gat gcc tcg gga gag aaa atg aat ggc tcc cac	288
Asp Leu Arg Met Leu Asp Ala Ser Gly Glu Lys Met Asn Gly Ser His	
85 90 95	
agg gac caa ggc agc tcg gct ttg tca gga gtt gga ggc att cga ctt	336
Arg Asp Gln Gly Ser Ser Ala Leu Ser Gly Val Gly Gly Ile Arg Leu	
100 105 110	
cct aac gga aaa cta aag tgt gat atc tgt ggg atc gtt tgc atc ggg	384
Pro Asn Gly Lys Leu Lys Cys Asp Ile Cys Gly Ile Val Cys Ile Gly	
115 120 125	
ccc aat gtg ctc atg gtt cac aaa aga agt cat act ggt gaa cgg cct	432
Pro Asn Val Leu Met Val His Lys Arg Ser His Thr Gly Glu Arg Pro	
130 135 140	
ttc cag tgc aac cag tct ggg gcc tcc ttt acc cag aaa ggc aac ctc	480
Phe Gln Cys Asn Gln Ser Gly Ala Ser Phe Thr Gln Lys Gly Asn Leu	
145 150 155 160	
ctg cgg cac atc aag ctg cac tcg ggt gag aag ccc ttc aaa tgc cat	528
Leu Arg His Ile Lys Leu His Ser Gly Glu Lys Pro Phe Lys Cys His	
165 170 175	
ctt tgc aac tat gcc tgc cgc cgg agg gac gcc ctc acc ggc cac ctg	576
Leu Cys Asn Tyr Ala Cys Arg Arg Arg Asp Ala Leu Thr Gly His Leu	
180 185 190	
agg acg cac tcc gga gac aag tgc ctg tca gac atg ccc tat gac agt	624
Arg Thr His Ser Gly Asp Lys Cys Leu Ser Asp Met Pro Tyr Asp Ser	
195 200 205	
gcc aac tat gag aag gag gat atg atg aca tcc cac gtg atg gac cag	672
Ala Asn Tyr Glu Lys Glu Asp Met Met Thr Ser His Val Met Asp Gln	
210 215 220	
gcc atc aac aat gcc atc aac tac ctg ggg gct gag tcc ctg cgc cca	720
Ala Ile Asn Asn Ala Ile Asn Tyr Leu Gly Ala Glu Ser Leu Arg Pro	
225 230 235 240	
ttg gtg cag aca ccc ccc ggt agc tcc gag gtg gtg cca gtc atc agc	768
Leu Val Gln Thr Pro Pro Gly Ser Ser Glu Val Val Pro Val Ile Ser	
245 250 255	
tcc atg tac cag ctg cac aag ccc ccc tca gat ggc ccc cca cgg tcc	816
Ser Met Tyr Gln Leu His Lys Pro Pro Ser Asp Gly Pro Pro Arg Ser	
260 265 270	
aac cat tca gca cag gac gcc gtg gat aac ttg ctg ctg ctg tcc aag	864
Asn His Ser Ala Gln Asp Ala Val Asp Asn Leu Leu Leu Leu Ser Lys	
275 280 285	
gcc aag tct gtg tca tcg gag cga gag gcc tcc ccg agc aac agc tgc	912

Ala Lys Ser Val Ser Ser Glu Arg Glu Ala Ser Pro Ser Asn Ser Cys	
290 295 300	
caa gac tcc aca gat aca gag agc aac gcg gag gaa cag cgc agc ggc	960
Gln Asp Ser Thr Asp Thr Glu Ser Asn Ala Glu Glu Gln Arg Ser Gly	
305 310 315 320	
ctt atc tac cta acc aac cac atc aac ccg cat gca cgc aat ggg ctg	1008
Leu Ile Tyr Leu Thr Asn His Ile Asn Pro His Ala Arg Asn Gly Leu	
325 330 335	
gct ctc aag gag gag cag cgc gcc tac gag gtg ctg agg gcg gcc tca	1056
Ala Leu Lys Glu Glu Gln Arg Ala Tyr Glu Val Leu Arg Ala Ala Ser	
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Glu Asn Ser Gln Asp Ala Phe Arg Val Val Ser Thr Ser Gly Glu Gln	
355 360 365	
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Leu Lys Val Tyr Lys Cys Glu His Cys Arg Val Leu Phe Leu Asp His	
370 375 380	
gtc atg tat acc att cac atg ggc tgc cat ggc tgc cat ggc ttt cgg	1200
Val Met Tyr Thr Ile His Met Gly Cys His Gly Cys His Gly Phe Arg	
385 390 395 400	
gat ccc ttt gag tgt aac atg tgt ggt tat cac agc cag gac agg tac	1248
Asp Pro Phe Glu Cys Asn Met Cys Gly Tyr His Ser Gln Asp Arg Tyr	
405 410 415	
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ccactcagag gggactcaga gcaagtctag atttgtgtgg cagagagaga cagctctcgt	180
ttggccttgg ggaggcacaa gtctgttgat aacctgaaga ca atg gat gtc gat	234
Met Asp Val Asp	
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 gag ggt caa gac atg tcc caa gtt tca gga aag gag agc ccc cca gtc	
Glu Gly Gln Asp Met Ser Gln Val Ser Gly Lys Glu Ser Pro Pro Val	282
5 10 15 20	

agt gac act cca gat gaa ggg gat gag ccc atg cct gtc cct gag gac	330
Ser Asp Thr Pro Asp Glu Gly Asp Glu Pro Met Pro Val Pro Glu Asp	
25 30 35	
ctg tcc act acc tct gga gca cag cag aac tcc aag agt gat cga ggc	378
Leu Ser Thr Thr Ser Gly Ala Gln Gln Asn Ser Lys Ser Asp Arg Gly	
40 45 50	
atg gcc agt aat gtt aaa gta gag act cag agt gat gaa gag aat ggg	426
Met Ala Ser Asn Val Lys Val Glu Thr Gln Ser Asp Glu Glu Asn Gly	
55 60 65	
cgt gcc tgt gaa atg aat ggg gaa gaa tgt gca gag gat tta cga atg	474
Arg Ala Cys Glu Met Asn Gly Glu Glu Cys Ala Glu Asp Leu Arg Met	
70 75 80	
ctt gat gcc tcg gga gag aaa atg aat ggc tcc cac agg gac caa ggc	522
Leu Asp Ala Ser Gly Glu Lys Met Asn Gly Ser His Arg Asp Gln Gly	
85 90 95 100	
agc tcg gct ttg tca gga gtt gga ggc att cga ctt cct aac gga aaa	570
Ser Ser Ala Leu Ser Gly Val Gly Gly Ile Arg Leu Pro Asn Gly Lys	
105 110 115	
cta aag tgt gat atc tgt ggg atc gtt tgc atc ggg ccc aat gtg ctc	618
Leu Lys Cys Asp Ile Cys Gly Ile Val Cys Ile Gly Pro Asn Val Leu	
120 125 130	
atg gtt cac aaa aga agt cat act ggt gaa cgg cct ttc cag tgc aac	666
Met Val His Lys Arg Ser His Thr Gly Glu Arg Pro Phe Gln Cys Asn	
135 140 145	
cag tct ggg gcc tcc ttt acc cag aaa ggc aac ctc ctg cgg cac atc	714
Gln Ser Gly Ala Ser Phe Thr Gln Lys Gly Asn Leu Leu Arg His Ile	
150 155 160	
aag ctg cac tcg ggt gag aag ccc ttc aaa tgc cat ctt tgc aac tat	762
Lys Leu His Ser Gly Glu Lys Pro Phe Lys Cys His Leu Cys Asn Tyr	
165 170 175 180	
gcc tgc cgc cgg agg gac gcc ctc acc ggc cac ctg agg acg cac tcc	810
Ala Cys Arg Arg Arg Asp Ala Leu Thr Gly His Leu Arg Thr His Ser	
185 190 195	
gtt ggt aag cct cac aaa tgt gga tat tgt ggc cgg agc tat aaa cag	858
Val Gly Lys Pro His Lys Cys Gly Tyr Cys Gly Arg Ser Tyr Lys Gln	
200 205 210	
cga agc tct tta gag gag cat aaa gag cga tgc cac aac tac ttg gaa	906
Arg Ser Ser Leu Glu Glu His Lys Glu Arg Cys His Asn Tyr Leu Glu	
215 220 225	
agc atg ggc ctt ccg ggc gtg tgc cca gtc att aag gaa gaa act aac	954
Ser Met Gly Leu Pro Gly Val Cys Pro Val Ile Lys Glu Glu Thr Asn	
230 235 240	
cac aac gag atg gca gaa gac ctg tgc aag ata gga gca gag agg tcc	1002

His Asn Glu Met Ala Glu Asp Leu Cys Lys Ile Gly Ala Glu Arg Ser	
245 250 255 260	
ctt gtc ctg gac agg ctg gca agc aat gtc gcc aaa cgt aag agc tct	1050
Leu Val Leu Asp Arg Leu Ala Ser Asn Val Ala Lys Arg Lys Ser Ser	
265 270 275	
atg cct cag aaa ttt ctt gga gac aag tgc ctg tca gac atg ccc tat	1098
Met Pro Gln Lys Phe Leu Gly Asp Lys Cys Leu Ser Asp Met Pro Tyr	
280 285 290	
gac agt gcc aac tat gag aag gag gat atg atg aca tcc cac gtg atg	1146
Asp Ser Ala Asn Tyr Glu Lys Glu Asp Met Met Thr Ser His Val Met	
295 300 305	
gac cag gcc atc aac aat gcc atc aac tac ctg ggg gct gag tcc ctg	1194
Asp Gln Ala Ile Asn Asn Ala Ile Asn Tyr Leu Gly Ala Glu Ser Leu	
310 315 320	
cgc cca ttg gtg cag aca ccc ccc ggt agc tcc gag gtg gtg cca gtc	1242
Arg Pro Leu Val Gln Thr Pro Pro Gly Ser Ser Glu Val Val Pro Val	
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atc agc tcc atg tac cag ctg cac aag ccc ccc tca gat ggc ccc cca	1290
Ile Ser Ser Met Tyr Gln Leu His Lys Pro Pro Ser Asp Gly Pro Pro	
345 350 355	
cgg tcc aac cat tca gca cag gac gcc gtg gat aac ttg ctg ctg ctg	1338
Arg Ser Asn His Ser Ala Gln Asp Ala Val Asp Asn Leu Leu Leu Leu	
360 365 370	
tcc aag gcc aag tct gtg tca tcg gag cga gag gcc tcc ccg agc aac	1386
Ser Lys Ala Lys Ser Val Ser Ser Glu Arg Glu Ala Ser Pro Ser Asn	
375 380 385	
agc tgc caa gac tcc aca gat aca gag agc aac gcg gag gaa cag cgc	1434
Ser Cys Gln Asp Ser Thr Asp Thr Glu Ser Asn Ala Glu Glu Gln Arg	
390 395 400	
agc ggc ctt atc tac cta acc aac cac atc aac ccg cat gca cgc aat	1482
Ser Gly Leu Ile Tyr Leu Thr Asn His Ile Asn Pro His Ala Arg Asn	
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ggg ctg gct ctc aag gag gag cag cgc gcc tac gag gtg ctg agg gcg	1530
Gly Leu Ala Leu Lys Glu Glu Gln Arg Ala Tyr Glu Val Leu Arg Ala	
425 430 435	
gcc tca gag aac tcg cag gat gcc ttc cgt gtg gtc agc acg agt ggc	1578
Ala Ser Glu Asn Ser Gln Asp Ala Phe Arg Val Val Ser Thr Ser Gly	
440 445 450	
gag cag ctg aag gtg tac aag tgc gaa cac tgc cgc gtg ctc ttc ctg	1626
Glu Gln Leu Lys Val Tyr Lys Cys Glu His Cys Arg Val Leu Phe Leu	
455 460 465	
gat cac gtc atg tat acc att cac atg ggc tgc cat ggc tgc cat ggc	1674
Asp His Val Met Tyr Thr Ile His Met Gly Cys His Gly Cys His Gly	

470	475	480	
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Phe Arg Asp Pro Phe Glu Cys Asn Met Cys Gly Tyr His Ser Gln Asp			
485	490	495	500
agg tac gag ttc tca tcc cat atc acg cgg ggg gag cat cgt tac cac			1770
Arg Tyr Glu Phe Ser Ser His Ile Thr Arg Gly Glu His Arg Tyr His			
	505	510	515
ctg agc taaaccacagc caggccccac tgaagcaciaa agatagctgg ttatgcctcc			1826
Leu Ser			
ttcccggcag ctggaccac agcggacaat gtgggagtgg atttcaggc agcatttggt			1886
cttttatggt ggttggttg cgtttcattt gcgttggaag ataagttttt aatgttagtg			1946
acaggattgc attgcatcag caacattcac aacatccatc cttctagcca gttttgttca			2006
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agc ccc cca gtc agt gac act cca gat gaa ggg gat gag ccc atg cct			96
Ser Pro Pro Val Ser Asp Thr Pro Asp Glu Gly Asp Glu Pro Met Pro			
	20	25	30
gtc cct gag gac ctg tcc act acc tct gga gca cag cag aac tcc aag			144
Val Pro Glu Asp Leu Ser Thr Thr Ser Gly Ala Gln Gln Asn Ser Lys			
	35	40	45
agt gat cga ggc atg ggt gaa cgg cct ttc cag tgc aac cag tct ggg			192
Ser Asp Arg Gly Met Gly Glu Arg Pro Phe Gln Cys Asn Gln Ser Gly			
	50	55	60
gcc tcc ttt acc cag aaa ggc aac ctc ctg cgg cac atc aag ctg cac			240
Ala Ser Phe Thr Gln Lys Gly Asn Leu Leu Arg His Ile Lys Leu His			
	65	70	75
tcg ggt gag aag ccc ttc aaa tgc cat ctt tgc aac tat gcc tgc cgc			288
Ser Gly Glu Lys Pro Phe Lys Cys His Leu Cys Asn Tyr Ala Cys Arg			
	85	90	95
cgg agg gac gcc ctc acc ggc cac ctg agg acg cac tcc gtc att aag			336
Arg Arg Asp Ala Leu Thr Gly His Leu Arg Thr His Ser Val Ile Lys			
	100	105	110

gaa gaa act aac cac aac gag atg gca gaa gac ctg tgc aag ata gga Glu Glu Thr Asn His Asn Glu Met Ala Glu Asp Leu Cys Lys Ile Gly 115 120 125	384
gca gag agg tcc ctt gtc ctg gac agg ctg gca agc aat gtc gcc aaa Ala Glu Arg Ser Leu Val Leu Asp Arg Leu Ala Ser Asn Val Ala Lys 130 135 140	432
cgt aag agc tct atg cct cag aaa ttt ctt gga gac aag tgc ctg tca Arg Lys Ser Ser Met Pro Gln Lys Phe Leu Gly Asp Lys Cys Leu Ser 145 150 155 160	480
gac atg ccc tat gac agt gcc aac tat gag aag gag gat atg atg aca Asp Met Pro Tyr Asp Ser Ala Asn Tyr Glu Lys Glu Asp Met Met Thr 165 170 175	528
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gct gag tcc ctg cgc cca ttg gtg cag aca ccc ccc ggt agc tcc gag Ala Glu Ser Leu Arg Pro Leu Val Gln Thr Pro Pro Gly Ser Ser Glu 195 200 205	624
gtg gtg cca gtc atc agc tcc atg tac cag ctg cac aag ccc ccc tca Val Val Pro Val Ile Ser Ser Met Tyr Gln Leu His Lys Pro Pro Ser 210 215 220	672
gat ggc ccc cca cgg tcc aac cat tca gca cag gac gcc gtg gat aac Asp Gly Pro Pro Arg Ser Asn His Ser Ala Gln Asp Ala Val Asp Asn 225 230 235 240	720
ttg ctg ctg ctg tcc aag gcc aag tct gtg tca tcg gag cga gag gcc Leu Leu Leu Leu Ser Lys Ala Lys Ser Val Ser Ser Glu Arg Glu Ala 245 250 255	768
tcc ccg agc aac agc tgc caa gac tcc aca gat aca gag agc aac gcg Ser Pro Ser Asn Ser Cys Gln Asp Ser Thr Asp Thr Glu Ser Asn Ala 260 265 270	816
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cat gca cgc aat ggg ctg gct ctc aag gag gag cag cgc gcc tac gag His Ala Arg Asn Gly Leu Ala Leu Lys Glu Glu Gln Arg Ala Tyr Glu 290 295 300	912
gtg ctg agg gcg gcc tca gag aac tcg cag gat gcc ttc cgt gtg gtc Val Leu Arg Ala Ala Ser Glu Asn Ser Gln Asp Ala Phe Arg Val Val 305 310 315 320	960
agc acg agt ggc gag cag ctg aag gtg tac aag tgc gaa cac tgc cgc Ser Thr Ser Gly Glu Gln Leu Lys Val Tyr Lys Cys Glu His Cys Arg 325 330 335	1008
gtg ctc ttc ctg gat cac gtc atg tat acc att cac atg ggc tgc cat	1056

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Gly	Cys	His	Gly	Phe	Arg	Asp	Pro	Phe	Glu	Cys	Asn	Met	Cys	Gly	Tyr		
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cac	agc	cag	gac	agg	tac	gag	ttc	tca	tcc	cat	atc	acg	cgg	ggg	gag	1152	
His	Ser	Gln	Asp	Arg	Tyr	Glu	Phe	Ser	Ser	His	Ile	Thr	Arg	Gly	Glu		
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Ser	Pro	Pro	Val	Ser	Asp	Thr	Pro	Asp	Glu	Gly	Asp	Glu	Pro	Met	Pro		
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Val	Pro	Glu	Asp	Leu	Ser	Thr	Thr	Ser	Gly	Ala	Gln	Gln	Asn	Ser	Lys		
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agt	gat	cga	ggc	atg	gcc	agt	aat	gtt	aaa	gta	gag	act	cag	agt	gat	192	
Ser	Asp	Arg	Gly	Met	Ala	Ser	Asn	Val	Lys	Val	Glu	Thr	Gln	Ser	Asp		
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gaa	gag	aat	ggg	cgt	gcc	tgt	gaa	atg	aat	ggg	gaa	gaa	tgt	gca	gag	240	
Glu	Glu	Asn	Gly	Arg	Ala	Cys	Glu	Met	Asn	Gly	Glu	Glu	Cys	Ala	Glu		
65				70					75					80			
gat	tta	cga	atg	ctt	gat	gcc	tcg	gga	gag	aaa	atg	aat	ggc	tcc	cac	288	
Asp	Leu	Arg	Met	Leu	Asp	Ala	Ser	Gly	Glu	Lys	Met	Asn	Gly	Ser	His		
				85					90					95			
agg	gac	caa	ggc	agc	tcg	gct	ttg	tca	gga	gtt	gga	ggc	att	cga	ctt	336	
Arg	Asp	Gln	Gly	Ser	Ser	Ala	Leu	Ser	Gly	Val	Gly	Gly	Ile	Arg	Leu		
		100						105					110				
cct	aac	gga	aaa	cta	aag	tgt	gat	atc	tgt	ggg	atc	gtt	tgc	atc	ggg	384	
Pro	Asn	Gly	Lys	Leu	Lys	Cys	Asp	Ile	Cys	Gly	Ile	Val	Cys	Ile	Gly		
		115					120					125					

ccc aat gtg ctc atg gtt cac aaa aga agt cat act gga gac aag tgc	432
Pro Asn Val Leu Met Val His Lys Arg Ser His Thr Gly Asp Lys Cys	
130 135 140	
ctg tca gac atg ccc tat gac agt gcc aac tat gag aag gag gat atg	480
Leu Ser Asp Met Pro Tyr Asp Ser Ala Asn Tyr Glu Lys Glu Asp Met	
145 150 155 160	
atg aca tcc cac gtg atg gac cag gcc atc aac aat gcc atc aac tac	528
Met Thr Ser His Val Met Asp Gln Ala Ile Asn Asn Ala Ile Asn Tyr	
165 170 175	
ctg ggg gct gag tcc ctg cgc cca ttg gtg cag aca ccc ccc ggt agc	576
Leu Gly Ala Glu Ser Leu Arg Pro Leu Val Gln Thr Pro Pro Gly Ser	
180 185 190	
tcc gag gtg gtg cca gtc atc agc tcc atg tac cag ctg cac aag ccc	624
Ser Glu Val Val Pro Val Ile Ser Ser Met Tyr Gln Leu His Lys Pro	
195 200 205	
ccc tca gat ggc ccc cca cgg tcc aac cat tca gca cag gac gcc gtg	672
Pro Ser Asp Gly Pro Pro Arg Ser Asn His Ser Ala Gln Asp Ala Val	
210 215 220	
gat aac ttg ctg ctg ctg tcc aag gcc aag tct gtg tca tcg gag cga	720
Asp Asn Leu Leu Leu Ser Lys Ala Lys Ser Val Ser Ser Glu Arg	
225 230 235 240	
gag gcc tcc ccg agc aac agc tgc caa gac tcc aca gat aca gag agc	768
Glu Ala Ser Pro Ser Asn Ser Cys Gln Asp Ser Thr Asp Thr Glu Ser	
245 250 255	
aac gcg gag gaa cag cgc agc ggc ctt atc tac cta acc aac cac atc	816
Asn Ala Glu Glu Gln Arg Ser Gly Leu Ile Tyr Leu Thr Asn His Ile	
260 265 270	
aac ccg cat gca cgc aat ggg ctg gct ctc aag gag gag cag cgc gcc	864
Asn Pro His Ala Arg Asn Gly Leu Ala Leu Lys Glu Glu Gln Arg Ala	
275 280 285	
tac gag gtg ctg agg gcg gcc tca gag aac tcg cag gat gcc ttc cgt	912
Tyr Glu Val Leu Arg Ala Ala Ser Glu Asn Ser Gln Asp Ala Phe Arg	
290 295 300	
gtg gtc agc acg agt ggc gag cag ctg aag gtg tac aag tgc gaa cac	960
Val Val Ser Thr Ser Gly Glu Gln Leu Lys Val Tyr Lys Cys Glu His	
305 310 315 320	
tgc cgc gtg ctc ttc ctg gat cac gtc atg tat acc att cac atg ggc	1008
Cys Arg Val Leu Phe Leu Asp His Val Met Tyr Thr Ile His Met Gly	
325 330 335	
tgc cat ggc tgc cat ggc ttt cgg gat ccc ttt gag tgt aac atg tgt	1056
Cys His Gly Cys His Gly Phe Arg Asp Pro Phe Glu Cys Asn Met Cys	
340 345 350	

ggt tat cac agc cag gac agg tac gag ttc tca tcc cat atc acg cgg 1104
 Gly Tyr His Ser Gln Asp Arg Tyr Glu Phe Ser Ser His Ile Thr Arg
 355 360 365

ggg gag cat cgt tac cac ctg agc 1128
 Gly Glu His Arg Tyr His Leu Ser
 370 375

<210> 21

<211> 1004

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

<222> (1)...(1002)

<400> 21

gga gaa cgg ccc ttc cag tgc aat cag tgc ggg gcc tca ttc acc cag 48
 Gly Glu Arg Pro Phe Gln Cys Asn Gln Cys Gly Ala Ser Phe Thr Gln
 1 5 10 15

aag ggc aac ctg ctc cgg cac atc aag ctg cat tcc ggg gag aag ccc 96
 Lys Gly Asn Leu Leu Arg His Ile Lys Leu His Ser Gly Glu Lys Pro
 20 25 30

ttc aaa tgc cac ctc tgc aac tac gcc tgc cgc cgg agg gac gcc ctc 144
 Phe Lys Cys His Leu Cys Asn Tyr Ala Cys Arg Arg Arg Asp Ala Leu
 35 40 45

act ggc cac ctg agg acg cac tcc gtc att aaa gaa gaa act aag cac 192
 Thr Gly His Leu Arg Thr His Ser Val Ile Lys Glu Glu Thr Lys His
 50 55 60

agt gaa atg gca gaa gac ctg tgc aag ata gga tca gag aga tct ctc 240
 Ser Glu Met Ala Glu Asp Leu Cys Lys Ile Gly Ser Glu Arg Ser Leu
 65 70 75 80

gtg ctg gac aga cta gca agt aat gtc gcc aaa cgt aag agc tct atg 288
 Val Leu Asp Arg Leu Ala Ser Asn Val Ala Lys Arg Lys Ser Ser Met
 85 90 95

cct cag aaa ttt ctt ggg gac aag ggc ctg tcc gac acg ccc tac gac 336
 Pro Gln Lys Phe Leu Gly Asp Lys Gly Leu Ser Asp Thr Pro Tyr Asp
 100 105 110

agt gcc acg tac gag aag gag aac gaa atg atg aag tcc cac gtg atg 384
 Ser Ala Thr Tyr Glu Lys Glu Asn Glu Met Met Lys Ser His Val Met
 115 120 125

gac caa gcc atc aac aac gcc atc aac tac ctg ggg gcc gag tcc ctg 432
 Asp Gln Ala Ile Asn Asn Ala Ile Asn Tyr Leu Gly Ala Glu Ser Leu
 130 135 140

cgc ccg ctg gtg cag acg ccc ccg ggc ggt tcc gag gtg gtc ccg gtc 480
 Arg Pro Leu Val Gln Thr Pro Pro Gly Gly Ser Glu Val Val Pro Val

145	150	155	160	
atc agc ccg atg tac cag ctg cac agg cgc tcg gag ggc acc ccg cgc				528
Ile Ser Pro Met Tyr Gln Leu His Arg Arg Ser Glu Gly Thr Pro Arg				
	165	170	175	
tcc aac cac tcg gcc cag gac agc gcc gtg gag tac ctg ctg ctg ctc				576
Ser Asn His Ser Ala Gln Asp Ser Ala Val Glu Tyr Leu Leu Leu				
	180	185	190	
tcc aag gcc aag ttg gtg ccc tcg gag cgc gag gcg tcc ccg agc aac				624
Ser Lys Ala Lys Leu Val Pro Ser Glu Arg Glu Ala Ser Pro Ser Asn				
	195	200	205	
agc tgc caa gac tcc acg gac acc gag agc aac aac gag gag cag cgc				672
Ser Cys Gln Asp Ser Thr Asp Thr Glu Ser Asn Asn Glu Glu Gln Arg				
	210	215	220	
agc ggt ctt atc tac ctg acc aac cac atc gcc cga cgc gcg caa cgc				720
Ser Gly Leu Ile Tyr Leu Thr Asn His Ile Ala Arg Arg Ala Gln Arg				
	225	230	235	240
gtg tcg ctc aag gag gag cac cgc gcc tac gac ctg ctg cgc gcc gcc				768
Val Ser Leu Lys Glu Glu His Arg Ala Tyr Asp Leu Leu Arg Ala Ala				
	245	250	255	
tcc gag aac tcg cag gac gcg ctc cgc gtg gtc agc acc agc ggg gag				816
Ser Glu Asn Ser Gln Asp Ala Leu Arg Val Val Ser Thr Ser Gly Glu				
	260	265	270	
cag atg aag gtg tac aag tgc gaa cac tgc cgg gtg ctc ttc ctg gat				864
Gln Met Lys Val Tyr Lys Cys Glu His Cys Arg Val Leu Phe Leu Asp				
	275	280	285	
cac gtc atg tac acc atc cac atg ggc tgc cac ggc ttc cgt gat cct				912
His Val Met Tyr Thr Ile His Met Gly Cys His Gly Phe Arg Asp Pro				
	290	295	300	
ttt gag tgc aac atg tgc ggc tac cac agc cag gac cgg tac gag ttc				960
Phe Glu Cys Asn Met Cys Gly Tyr His Ser Gln Asp Arg Tyr Glu Phe				
	305	310	315	320
tcg tcg cac ata acg cga ggg gag cac cgc ttc cac atg agc				1002
Ser Ser His Ile Thr Arg Gly Glu His Arg Phe His Met Ser				
	325	330		
ta				1004

<210> 22

<211> 470

<212> PRT

<213> Artificial Sequence

<220>

<223> majority sequence

<221> VARIANT

<222> (1)...(470)

<223> Xaa = Any Amino Acid

<400> 22

Xaa	Xaa	Ala	Ser	Asn	Val	Lys	Val	Glu	Thr	Gln	Ser	Asp	Glu	Glu	Asn
1				5					10					15	
Gly	Arg	Ala	Cys	Glu	Met	Asn	Gly	Glu	Glu	Cys	Ala	Glu	Asp	Leu	Arg
		20						25					30		
Met	Leu	Asp	Ala	Ser	Gly	Glu	Lys	Met	Asn	Gly	Ser	His	Arg	Asp	Gln
		35					40					45			
Gly	Ser	Ser	Ala	Leu	Ser	Gly	Val	Gly	Gly	Ile	Arg	Leu	Pro	Asn	Gly
	50					55					60				
Lys	Leu	Lys	Cys	Asp	Ile	Cys	Gly	Ile	Xaa	Cys	Ile	Gly	Pro	Asn	Val
65				70					75					80	
Leu	Met	Val	His	Lys	Arg	Ser	His	Thr	Gly	Glu	Arg	Pro	Phe	Gln	Cys
			85					90					95		
Asn	Gln	Cys	Gly	Ala	Ser	Phe	Thr	Gln	Lys	Gly	Asn	Leu	Leu	Arg	His
		100						105				110			
Ile	Lys	Leu	His	Ser	Gly	Glu	Lys	Pro	Phe	Lys	Cys	His	Leu	Cys	Asn
	115					120					125				
Tyr	Ala	Cys	Arg	Arg	Arg	Asp	Ala	Leu	Thr	Gly	His	Leu	Arg	Thr	His
	130					135					140				
Ser	Val	Gly	Lys	Pro	His	Lys	Cys	Gly	Tyr	Cys	Gly	Arg	Ser	Tyr	Lys
145				150					155					160	
Gln	Arg	Xaa	Ser	Leu	Glu	Glu	His	Lys	Glu	Arg	Cys	His	Asn	Tyr	Leu
			165					170						175	
Glu	Ser	Met	Gly	Leu	Pro	Gly	Xaa	Xaa	Xaa	Pro	Val	Ile	Lys	Glu	Glu
		180					185					190			
Thr	Xaa	His	Xaa	Glu	Met	Ala	Glu	Asp	Leu	Cys	Lys	Ile	Gly	Xaa	Glu
	195					200						205			
Arg	Ser	Leu	Val	Leu	Asp	Arg	Leu	Ala	Ser	Asn	Val	Ala	Lys	Arg	Lys
	210					215					220				
Ser	Ser	Met	Pro	Gln	Lys	Phe	Leu	Gly	Asp	Lys	Xaa	Leu	Ser	Asp	Xaa
225				230					235					240	
Pro	Tyr	Asp	Ser	Ala	Xaa	Tyr	Glu	Lys	Glu	Xaa	Xaa	Met	Met	Xaa	Ser
			245					250						255	
His	Val	Met	Asp	Xaa	Ala	Ile	Asn	Asn	Ala	Ile	Asn	Tyr	Leu	Gly	Ala
		260					265					270			
Glu	Ser	Leu	Arg	Pro	Leu	Val	Gln	Thr	Pro	Pro	Gly	Xaa	Ser	Glu	Val
	275					280					285				
Val	Pro	Val	Ile	Ser	Pro	Met	Tyr	Gln	Leu	His	Xaa	Xaa	Xaa	Ser	Xaa
	290				295						300				
Gly	Xaa	Pro	Arg	Ser	Asn	His	Ser	Ala	Gln	Asp	Xaa	Ala	Val	Xaa	Xaa
305				310					315					320	
Leu	Leu	Leu	Leu	Ser	Lys	Ala	Lys	Xaa	Val	Xaa	Ser	Glu	Arg	Glu	Ala
			325					330					335		
Ser	Pro	Ser	Asn	Ser	Cys	Gln	Asp	Ser	Thr	Asp	Thr	Glu	Ser	Asn	Xaa
		340					345					350			
Glu	Glu	Gln	Arg	Ser	Gly	Leu	Ile	Tyr	Leu	Thr	Asn	His	Ile	Xaa	Xaa
	355					360					365				
Xaa	Ala	Xaa	Xaa	Xaa	Xaa	Xaa	Leu	Lys	Glu	Glu	Xaa	Arg	Ala	Tyr	Xaa
	370					375					380				
Xaa	Leu	Arg	Ala	Ala	Ser	Glu	Asn	Ser	Gln	Asp	Ala	Xaa	Arg	Val	Val
385				390					395					400	
Ser	Thr	Ser	Gly	Glu	Gln	Xaa	Lys	Val	Tyr	Lys	Cys	Glu	His	Cys	Arg
			405					410				415			
Val	Leu	Phe	Leu	Asp	His	Val	Met	Tyr	Thr	Ile	His	Met	Xaa	Xaa	Xaa

	420		425		430
Gly Cys His	Gly Phe Arg Asp	Pro Phe Glu Cys Asn	Met Cys Gly Tyr		
	435	440	445		
His Ser Gln	Asp Arg Tyr Glu	Phe Ser Ser His	Ile Thr Arg Gly Glu		
	450	455	460		
His Arg Xaa	His Xaa Ser				
465	470				

<210> 23
 <211> 334
 <212> PRT
 <213> Homo sapiens

<400> 23

Gly Glu Arg	Pro Phe Gln Cys Asn	Gln Cys Gly Ala Ser	Phe Thr Gln
1	5	10	15
Lys Gly Asn	Leu Leu Arg His Ile	Lys Leu His Ser Gly	Glu Lys Pro
	20	25	30
Phe Lys Cys	His Leu Cys Asn Tyr	Ala Cys Arg Arg Arg	Asp Ala Leu
	35	40	45
Thr Gly His	Leu Arg Thr His	Ser Val Ile Lys Glu	Glu Thr Lys His
	50	55	60
Ser Glu Met	Ala Glu Asp Leu Cys	Lys Ile Gly Ser Glu	Arg Ser Leu
65	70	75	80
Val Leu Asp	Arg Leu Ala Ser Asn	Val Ala Lys Arg Lys	Ser Ser Met
	85	90	95
Pro Gln Lys	Phe Leu Gly Asp Lys	Gly Leu Ser Asp Thr	Pro Tyr Asp
	100	105	110
Ser Ala Thr	Tyr Glu Lys Glu Asn	Glu Met Met Lys Ser	His Val Met
	115	120	125
Asp Gln Ala	Ile Asn Asn Ala Ile	Asn Tyr Leu Gly Ala	Glu Ser Leu
	130	135	140
Arg Pro Leu	Val Gln Thr Pro Pro	Gly Gly Ser Glu Val	Val Pro Val
145	150	155	160
Ile Ser Pro	Met Tyr Gln Leu His	Arg Arg Ser Glu Gly	Thr Pro Arg
	165	170	175
Ser Asn His	Ser Ala Gln Asp Ser	Ala Val Glu Tyr Leu	Leu Leu Leu
	180	185	190
Ser Lys Ala	Lys Leu Val Pro Ser	Glu Arg Glu Ala Ser	Pro Ser Asn
	195	200	205
Ser Cys Gln	Asp Ser Thr Asp Thr	Glu Ser Asn Asn Glu	Glu Gln Arg
	210	215	220
Ser Gly Leu	Ile Tyr Leu Thr Asn	His Ile Ala Arg Arg	Ala Gln Arg
225	230	235	240
Val Ser Leu	Lys Glu His Arg Ala	Tyr Asp Leu Leu Arg	Ala Ala
	245	250	255
Ser Glu Asn	Ser Gln Asp Ala Leu	Arg Val Val Ser Thr	Ser Gly Glu
	260	265	270
Gln Met Lys	Val Tyr Lys Cys Glu	His Cys Arg Val Leu	Phe Leu Asp
	275	280	285
His Val Met	Tyr Thr Ile His Met	Gly Cys His Gly Phe	Arg Asp Pro
	290	295	300
Phe Glu Cys	Asn Met Cys Gly Tyr	His Ser Gln Asp Arg	Tyr Glu Phe
305	310	315	320
Ser Ser His	Ile Thr Arg Gly Glu	His Arg Phe His Met	Ser
	325	330	

<210> 24
 <211> 431
 <212> PRT
 <213> Mus musculus

<400> 24

Met	Asp	Val	Asp	Glu	Gly	Gln	Asp	Met	Ser	Gln	Val	Ser	Gly	Lys	Glu
1				5					10					15	
Ser	Pro	Pro	Val	Ser	Asp	Thr	Pro	Asp	Glu	Gly	Asp	Glu	Pro	Met	Pro
			20					25					30		
Val	Pro	Glu	Asp	Leu	Ser	Thr	Thr	Ser	Gly	Ala	Gln	Gln	Asn	Ser	Lys
		35					40					45			
Ser	Asp	Arg	Gly	Met	Gly	Glu	Arg	Pro	Phe	Gln	Cys	Asn	Gln	Ser	Gly
	50					55					60				
Ala	Ser	Phe	Thr	Gln	Lys	Gly	Asn	Leu	Leu	Arg	His	Ile	Lys	Leu	His
65					70					75					80
Ser	Gly	Glu	Lys	Pro	Phe	Lys	Cys	His	Leu	Cys	Asn	Tyr	Ala	Cys	Arg
			85					90						95	
Arg	Arg	Asp	Ala	Leu	Thr	Gly	His	Leu	Arg	Thr	His	Ser	Val	Gly	Lys
			100					105					110		
Pro	His	Lys	Cys	Gly	Tyr	Cys	Gly	Arg	Ser	Tyr	Lys	Gln	Arg	Ser	Ser
		115					120					125			
Leu	Glu	Glu	His	Lys	Glu	Arg	Cys	His	Asn	Tyr	Leu	Glu	Ser	Met	Gly
	130					135					140				
Leu	Pro	Gly	Val	Cys	Pro	Val	Ile	Lys	Glu	Glu	Thr	Asn	His	Asn	Glu
145					150					155					160
Met	Ala	Glu	Asp	Leu	Cys	Lys	Ile	Gly	Ala	Glu	Arg	Ser	Leu	Val	Leu
			165					170						175	
Asp	Arg	Leu	Ala	Ser	Asn	Val	Ala	Lys	Arg	Lys	Ser	Ser	Met	Pro	Gln
			180					185					190		
Lys	Phe	Leu	Gly	Asp	Lys	Cys	Leu	Ser	Asp	Met	Pro	Tyr	Asp	Ser	Ala
	195						200					205			
Asn	Tyr	Glu	Lys	Glu	Asp	Met	Met	Thr	Ser	His	Val	Met	Asp	Gln	Ala
	210					215					220				
Ile	Asn	Asn	Ala	Ile	Asn	Tyr	Leu	Gly	Ala	Glu	Ser	Leu	Arg	Pro	Leu
225					230					235					240
Val	Gln	Thr	Pro	Pro	Gly	Ser	Ser	Glu	Val	Val	Pro	Val	Ile	Ser	Ser
			245					250						255	
Met	Tyr	Gln	Leu	His	Lys	Pro	Pro	Ser	Asp	Gly	Pro	Pro	Arg	Ser	Asn
		260					265						270		
His	Ser	Ala	Gln	Asp	Ala	Val	Asp	Asn	Leu	Leu	Leu	Leu	Ser	Lys	Ala
	275						280					285			
Lys	Ser	Val	Ser	Ser	Glu	Arg	Glu	Ala	Ser	Pro	Ser	Asn	Ser	Cys	Gln
	290					295					300				
Asp	Ser	Thr	Asp	Thr	Glu	Ser	Asn	Ala	Glu	Glu	Gln	Arg	Ser	Gly	Leu
305					310					315					320
Ile	Tyr	Leu	Thr	Asn	His	Ile	Asn	Pro	His	Ala	Arg	Asn	Gly	Leu	Ala
			325					330						335	
Leu	Lys	Glu	Glu	Gln	Arg	Ala	Tyr	Glu	Val	Leu	Arg	Ala	Ala	Ser	Glu
		340					345					350			
Asn	Ser	Gln	Asp	Ala	Phe	Arg	Val	Val	Ser	Thr	Ser	Gly	Glu	Gln	Leu
	355					360						365			
Lys	Val	Tyr	Lys	Cys	Glu	His	Cys	Arg	Val	Leu	Phe	Leu	Asp	His	Val
	370					375					380				
Met	Tyr	Thr	Ile	His	Met	Gly	Cys	His	Gly	Cys	His	Gly	Phe	Arg	Asp
385					390					395					400
Pro	Phe	Glu	Cys	Asn	Met	Cys	Gly	Tyr	His	Ser	Gln	Asp	Arg	Tyr	Glu

				405					410				415			
Phe	Ser	Ser	His	Ile	Thr	Arg	Gly	Glu	His	Arg	Tyr	His	Leu	Ser		
			420					425					430			

<210> 25
 <211> 461
 <212> PRT
 <213> Homo sapiens

<400> 25
 Asn Val Lys Val Glu Thr Gln Ser Asp Glu Glu Asn Gly Arg Ala Cys
 1 5 10 15
 Glu Met Asn Gly Glu Glu Cys Ala Glu Asp Leu Arg Met Leu Asp Ala
 20 25 30
 Ser Gly Glu Lys Met Asn Gly Ser His Arg Asp Gln Gly Ser Ser Ala
 35 40 45
 Leu Ser Gly Val Gly Gly Ile Arg Leu Pro Asn Gly Lys Leu Lys Cys
 50 55 60
 Asp Ile Cys Gly Ile Ile Cys Ile Gly Pro Asn Val Leu Met Val His
 65 70 75 80
 Lys Arg Ser His Thr Gly Glu Arg Pro Phe Gln Cys Asn Gln Cys Gly
 85 90 95
 Ala Ser Phe Thr Gln Lys Gly Asn Leu Leu Arg His Ile Lys Leu His
 100 105 110
 Ser Gly Glu Lys Pro Phe Lys Cys His Leu Cys Asn Tyr Ala Cys Arg
 115 120 125
 Arg Arg Asp Ala Leu Thr Gly His Leu Arg Thr His Ser Val Gly Lys
 130 135 140
 Pro His Lys Cys Gly Tyr Cys Gly Arg Ser Tyr Lys Gln Arg Thr Ser
 145 150 155 160
 Leu Glu Glu His Lys Glu Arg Cys His Asn Tyr Leu Glu Ser Met Gly
 165 170 175
 Leu Pro Gly Thr Leu Tyr Pro Val Ile Lys Glu Glu Thr Lys His Ser
 180 185 190
 Glu Met Ala Glu Asp Leu Cys Lys Ile Gly Ser Glu Arg Ser Leu Val
 195 200 205
 Leu Asp Arg Leu Ala Ser Asn Val Ala Lys Arg Lys Ser Ser Met Pro
 210 215 220
 Gln Lys Phe Leu Gly Asp Lys Gly Leu Ser Asp Thr Pro Tyr Asp Ser
 225 230 235 240
 Ala Thr Tyr Glu Lys Glu Asn Glu Met Met Lys Ser His Val Met Asp
 245 250 255
 Gln Ala Ile Asn Asn Ala Ile Asn Tyr Leu Gly Ala Glu Ser Leu Arg
 260 265 270
 Pro Leu Val Gln Thr Pro Pro Gly Gly Ser Glu Val Val Pro Val Ile
 275 280 285
 Ser Pro Met Tyr Gln Leu His Arg Arg Ser Glu Gly Thr Pro Arg Ser
 290 295 300
 Asn His Ser Ala Gln Asp Ser Ala Val Glu Tyr Leu Leu Leu Leu Ser
 305 310 315 320
 Lys Ala Lys Leu Val Pro Ser Glu Arg Glu Ala Ser Pro Ser Asn Ser
 325 330 335
 Cys Gln Asp Ser Thr Asp Thr Glu Ser Asn Asn Glu Glu Gln Arg Ser
 340 345 350
 Gly Leu Ile Tyr Leu Thr Asn His Ile Ala Arg Arg Ala Gln Arg Val
 355 360 365
 Ser Leu Lys Glu Glu His Arg Ala Tyr Asp Leu Leu Arg Ala Ala Ser

370		375		380
Glu Asn Ser Gln Asp	Ala Leu Arg Val Val	Ser Thr Ser Gly Glu Gln		
385	390	395		400
Met Lys Val Tyr Lys	Cys Glu His Cys Arg	Val Leu Phe Leu Asp His		
	405	410		415
Val Met Tyr Thr Ile	His Met Gly Cys His	Gly Phe Arg Asp Pro Phe		
	420	425		430
Glu Cys Asn Met Cys	Gly Tyr His Ser Gln	Asp Arg Tyr Glu Phe Ser		
	435	440		445
Ser His Ile Thr Arg	Gly Glu His Arg Phe	His Met Ser		
450	455	460		

<210> 26
 <211> 432
 <212> PRT
 <213> Mus musculus

<400> 26

Met Asp Val Asp Glu Gly Gln Asp Met Ser Gln Val Ser Gly Lys Glu		
1	5	10
Ser Pro Pro Val Ser Asp Thr Pro Asp Glu Gly Asp Glu Pro Met Pro		
	20	25
Val Pro Glu Asp Leu Ser Thr Thr Ser Gly Ala Gln Gln Asn Ser Lys		30
	35	40
Ser Asp Arg Gly Met Ala Ser Asn Val Lys Val Glu Thr Gln Ser Asp		45
	50	55
Glu Glu Asn Gly Arg Ala Cys Glu Met Asn Gly Glu Glu Cys Ala Glu		60
65	70	75
Asp Leu Arg Met Leu Asp Ala Ser Gly Glu Lys Met Asn Gly Ser His		80
	85	90
Arg Asp Gln Gly Ser Ser Ala Leu Ser Gly Val Gly Gly Ile Arg Leu		95
	100	105
Pro Asn Gly Lys Leu Lys Cys Asp Ile Cys Gly Ile Val Cys Ile Gly		110
	115	120
Pro Asn Val Leu Met Val His Lys Arg Ser His Thr Gly Glu Arg Pro		125
	130	135
Phe Gln Cys Asn Gln Ser Gly Ala Ser Phe Thr Gln Lys Gly Asn Leu		140
145	150	155
Leu Arg His Ile Lys Leu His Ser Gly Glu Lys Pro Phe Lys Cys His		160
	165	170
Leu Cys Asn Tyr Ala Cys Arg Arg Arg Asp Ala Leu Thr Gly His Leu		175
	180	185
Arg Thr His Ser Gly Asp Lys Cys Leu Ser Asp Met Pro Tyr Asp Ser		190
	195	200
Ala Asn Tyr Glu Lys Glu Asp Met Met Thr Ser His Val Met Asp Gln		205
	210	215
Ala Ile Asn Asn Ala Ile Asn Tyr Leu Gly Ala Glu Ser Leu Arg Pro		220
225	230	235
Leu Val Gln Thr Pro Pro Gly Ser Ser Glu Val Val Pro Val Ile Ser		240
	245	250
Ser Met Tyr Gln Leu His Lys Pro Pro Ser Asp Gly Pro Pro Arg Ser		255
	260	265
Asn His Ser Ala Gln Asp Ala Val Asp Asn Leu Leu Leu Leu Ser Lys		270
	275	280
Ala Lys Ser Val Ser Ser Glu Arg Glu Ala Ser Pro Ser Asn Ser Cys		285
	290	295
Gln Asp Ser Thr Asp Thr Glu Ser Asn Ala Glu Glu Gln Arg Ser Gly		300

305		310		315		320									
Leu	Ile	Tyr	Leu	Thr	Asn	His	Ile	Asn	Pro	His	Ala	Arg	Asn	Gly	Leu
			325						330					335	
Ala	Leu	Lys	Glu	Glu	Gln	Arg	Ala	Tyr	Glu	Val	Leu	Arg	Ala	Ala	Ser
			340						345					350	
Glu	Asn	Ser	Gln	Asp	Ala	Phe	Arg	Val	Val	Ser	Thr	Ser	Gly	Glu	Gln
		355					360					365			
Leu	Lys	Val	Tyr	Lys	Cys	Glu	His	Cys	Arg	Val	Leu	Phe	Leu	Asp	His
	370					375					380				
Val	Met	Tyr	Thr	Ile	His	Met	Gly	Cys	His	Gly	Cys	His	Gly	Phe	Arg
385					390					395					400
Asp	Pro	Phe	Glu	Cys	Asn	Met	Cys	Gly	Tyr	His	Ser	Gln	Asp	Arg	Tyr
				405					410					415	
Glu	Phe	Ser	Ser	His	Ile	Thr	Arg	Gly	Glu	His	Arg	Tyr	His	Leu	Ser
			420					425					430		

<210> 27

<211> 518

<212> PRT

<213> Mus musculus

<400> 27

Met	Asp	Val	Asp	Glu	Gly	Gln	Asp	Met	Ser	Gln	Val	Ser	Gly	Lys	Glu
1				5					10					15	
Ser	Pro	Pro	Val	Ser	Asp	Thr	Pro	Asp	Glu	Gly	Asp	Glu	Pro	Met	Pro
			20					25					30		
Val	Pro	Glu	Asp	Leu	Ser	Thr	Thr	Ser	Gly	Ala	Gln	Gln	Asn	Ser	Lys
		35					40					45			
Ser	Asp	Arg	Gly	Met	Ala	Ser	Asn	Val	Lys	Val	Glu	Thr	Gln	Ser	Asp
	50					55					60				
Glu	Glu	Asn	Gly	Arg	Ala	Cys	Glu	Met	Asn	Gly	Glu	Glu	Cys	Ala	Glu
65					70					75					80
Asp	Leu	Arg	Met	Leu	Asp	Ala	Ser	Gly	Glu	Lys	Met	Asn	Gly	Ser	His
				85					90					95	
Arg	Asp	Gln	Gly	Ser	Ser	Ala	Leu	Ser	Gly	Val	Gly	Gly	Ile	Arg	Leu
			100					105					110		
Pro	Asn	Gly	Lys	Leu	Lys	Cys	Asp	Ile	Cys	Gly	Ile	Val	Cys	Ile	Gly
		115					120					125			
Pro	Asn	Val	Leu	Met	Val	His	Lys	Arg	Ser	His	Thr	Gly	Glu	Arg	Pro
	130					135					140				
Phe	Gln	Cys	Asn	Gln	Ser	Gly	Ala	Ser	Phe	Thr	Gln	Lys	Gly	Asn	Leu
145					150					155					160
Leu	Arg	His	Ile	Lys	Leu	His	Ser	Gly	Glu	Lys	Pro	Phe	Lys	Cys	His
				165					170					175	
Leu	Cys	Asn	Tyr	Ala	Cys	Arg	Arg	Arg	Asp	Ala	Leu	Thr	Gly	His	Leu
			180					185					190		
Arg	Thr	His	Ser	Val	Gly	Lys	Pro	His	Lys	Cys	Gly	Tyr	Cys	Gly	Arg
		195					200					205			
Ser	Tyr	Lys	Gln	Arg	Ser	Ser	Leu	Glu	Glu	His	Lys	Glu	Arg	Cys	His
	210					215					220				
Asn	Tyr	Leu	Glu	Ser	Met	Gly	Leu	Pro	Gly	Val	Cys	Pro	Val	Ile	Lys
225					230					235					240
Glu	Glu	Thr	Asn	His	Asn	Glu	Met	Ala	Glu	Asp	Leu	Cys	Lys	Ile	Gly
				245					250					255	
Ala	Glu	Arg	Ser	Leu	Val	Leu	Asp	Arg	Leu	Ala	Ser	Asn	Val	Ala	Lys
			260					265					270		
Arg	Lys	Ser	Ser	Met	Pro	Gln	Lys	Phe	Leu	Gly	Asp	Lys	Cys	Leu	Ser

275	280	285
Asp Met Pro Tyr Asp Ser	Ala Asn Tyr Glu Lys	Glu Asp Met Met Thr
290	295	300
Ser His Val Met Asp Gln	Ala Ile Asn Asn Ala	Ile Asn Tyr Leu Gly
305	310	315
Ala Glu Ser Leu Arg Pro	Leu Val Gln Thr Pro	Pro Gly Ser Ser Glu
	325	330
Val Val Pro Val Ile Ser	Ser Met Tyr Gln Leu	His Lys Pro Pro Ser
	340	345
Asp Gly Pro Pro Arg Ser	Asn His Ser Ala Gln	Asp Ala Val Asp Asn
	355	360
Leu Leu Leu Leu Ser Lys	Ala Lys Ser Val Ser	Ser Glu Arg Glu Ala
	370	375
Ser Pro Ser Asn Ser Cys	Gln Asp Ser Thr Asp	Thr Glu Ser Asn Ala
385	390	395
Glu Glu Gln Arg Ser Gly	Leu Ile Tyr Leu Thr	Asn His Ile Asn Pro
	405	410
His Ala Arg Asn Gly Leu	Ala Leu Lys Glu Glu	Gln Arg Ala Tyr Glu
	420	425
Val Leu Arg Ala Ala Ser	Glu Asn Ser Gln Asp	Ala Phe Arg Val Val
	435	440
Ser Thr Ser Gly Glu Gln	Leu Lys Val Tyr Lys	Cys Glu His Cys Arg
	450	455
Val Leu Phe Leu Asp His	Val Met Tyr Thr Ile	His Met Gly Cys His
465	470	475
Gly Cys His Gly Phe Arg	Asp Pro Phe Glu Cys	Asn Met Cys Gly Tyr
	485	490
His Ser Gln Asp Arg Tyr	Glu Phe Ser Ser His	Ile Thr Arg Gly Glu
	500	505
His Arg Tyr His Leu Ser		
515		

<210> 28
 <211> 390
 <212> PRT
 <213> Mus musculus

<400> 28
Met Asp Val Asp Glu Gly Gln Asp Met Ser Gln Val Ser Gly Lys Glu
1 5 10 15
Ser Pro Pro Val Ser Asp Thr Pro Asp Glu Gly Asp Glu Pro Met Pro
20 25 30
Val Pro Glu Asp Leu Ser Thr Thr Ser Gly Ala Gln Gln Asn Ser Lys
35 40 45
Ser Asp Arg Gly Met Gly Glu Arg Pro Phe Gln Cys Asn Gln Ser Gly
50 55 60
Ala Ser Phe Thr Gln Lys Gly Asn Leu Leu Arg His Ile Lys Leu His
65 70 75 80
Ser Gly Glu Lys Pro Phe Lys Cys His Leu Cys Asn Tyr Ala Cys Arg
85 90 95
Arg Arg Asp Ala Leu Thr Gly His Leu Arg Thr His Ser Val Ile Lys
100 105 110
Glu Glu Thr Asn His Asn Glu Met Ala Glu Asp Leu Cys Lys Ile Gly
115 120 125
Ala Glu Arg Ser Leu Val Leu Asp Arg Leu Ala Ser Asn Val Ala Lys
130 135 140
Arg Lys Ser Ser Met Pro Gln Lys Phe Leu Gly Asp Lys Cys Leu Ser

145		150		155		160
Asp Met Pro Tyr	Asp Ser Ala Asn Tyr	Glu Lys Glu Asp Met	Met Thr			
	165	170	175			
Ser His Val Met	Asp Gln Ala Ile Asn	Asn Ala Ile Asn Tyr	Leu Gly			
	180	185	190			
Ala Glu Ser Leu	Arg Pro Leu Val Gln Thr	Pro Pro Gly Ser	Ser Glu			
	195	200	205			
Val Val Pro Val	Ile Ser Ser Met Tyr	Gln Leu His Lys	Pro Pro Ser			
	210	215	220			
Asp Gly Pro Pro	Arg Ser Asn His Ser	Ala Gln Asp Ala	Val Asp Asn			
	225	230	235			240
Leu Leu Leu Leu	Ser Lys Ala Lys Ser	Val Ser Ser Glu	Arg Glu Ala			
	245	250	255			
Ser Pro Ser Asn	Ser Cys Gln Asp Ser	Thr Asp Thr Glu	Ser Asn Ala			
	260	265	270			
Glu Glu Gln Arg	Ser Gly Leu Ile Tyr	Leu Thr Asn His	Ile Asn Pro			
	275	280	285			
His Ala Arg Asn	Gly Leu Ala Leu Lys	Glu Glu Gln Arg	Ala Tyr Glu			
	290	295	300			
Val Leu Arg Ala	Ala Ser Glu Asn Ser	Gln Asp Ala Phe	Arg Val Val			
	305	310	315			320
Ser Thr Ser Gly	Glu Gln Leu Lys Val	Tyr Lys Cys Glu	His Cys Arg			
	325	330	335			
Val Leu Phe Leu	Asp His Val Met Tyr	Thr Ile His Met	Gly Cys His			
	340	345	350			
Gly Cys His Gly	Phe Arg Asp Pro Phe	Glu Cys Asn Met	Cys Gly Tyr			
	355	360	365			
His Ser Gln Asp	Arg Tyr Glu Phe Ser	Ser His Ile Thr	Arg Gly Glu			
	370	375	380			
His Arg Tyr His	Leu Ser					
385	390					

<210> 29

<211> 376

<212> PRT

<213> Mus musculus

<400> 29

Met Asp Val Asp	Glu Gly Gln Asp	Met Ser Gln Val	Ser Gly Lys Glu
1	5	10	15
Ser Pro Pro Val	Ser Asp Thr Pro	Asp Glu Gly Asp	Glu Pro Met Pro
	20	25	30
Val Pro Glu Asp	Leu Ser Thr Thr	Ser Gly Ala Gln	Gln Asn Ser Lys
	35	40	45
Ser Asp Arg Gly	Met Ala Ser Asn	Val Lys Val Glu	Thr Gln Ser Asp
	50	55	60
Glu Glu Asn Gly	Arg Ala Cys Glu	Met Asn Gly Glu	Glu Cys Ala Glu
	65	70	75
Asp Leu Arg Met	Leu Asp Ala Ser	Gly Glu Lys Met	Asn Gly Ser His
	85	90	95
Arg Asp Gln Gly	Ser Ser Ala Leu	Ser Gly Val Gly	Gly Ile Arg Leu
	100	105	110
Pro Asn Gly Lys	Leu Lys Cys Asp	Ile Cys Gly Ile	Val Cys Ile Gly
	115	120	125
Pro Asn Val Leu	Met Val His Lys	Arg Ser His Thr	Gly Asp Lys Cys
	130	135	140
Leu Ser Asp Met	Pro Tyr Asp Ser	Ala Asn Tyr Glu	Lys Glu Asp Met

145		150		155		160
Met Thr Ser His Val	Met Asp Gln Ala Ile	Asn Asn Ala Ile	Asn Tyr			
	165	170	175			
Leu Gly Ala Glu Ser	Leu Arg Pro Leu Val	Gln Thr Pro Pro	Gly Ser			
	180	185	190			
Ser Glu Val Val Pro	Val Ile Ser Ser Met	Tyr Gln Leu His	Lys Pro			
	195	200	205			
Pro Ser Asp Gly Pro	Pro Arg Ser Asn His	Ser Ala Gln Asp	Ala Val			
	210	215	220			
Asp Asn Leu Leu Leu	Leu Ser Lys Ala Lys	Ser Val Ser Ser	Glu Arg			
225	230	235	240			
Glu Ala Ser Pro Ser	Asn Ser Cys Gln Asp	Ser Thr Asp Thr	Glu Ser			
	245	250	255			
Asn Ala Glu Glu Gln	Arg Ser Gly Leu Ile	Tyr Leu Thr Asn	His Ile			
	260	265	270			
Asn Pro His Ala Arg	Asn Gly Leu Ala Leu	Lys Glu Glu Gln	Arg Ala			
	275	280	285			
Tyr Glu Val Leu Arg	Ala Ala Ser Glu Asn	Ser Gln Asp Ala	Phe Arg			
	290	295	300			
Val Val Ser Thr Ser	Gly Glu Gln Leu Lys	Val Tyr Lys Cys	Glu His			
305	310	315	320			
Cys Arg Val Leu Phe	Leu Asp His Val Met	Tyr Thr Ile His	Met Gly			
	325	330	335			
Cys His Gly Cys His	Gly Phe Arg Asp Pro	Phe Glu Cys Asn	Met Cys			
	340	345	350			
Gly Tyr His Ser Gln	Asp Arg Tyr Glu Phe	Ser Ser His Ile	Thr Arg			
	355	360	365			
Gly Glu His Arg Tyr	His Leu Ser					
370	375					

<210> 30
 <211> 240
 <212> PRT
 <213> Gallus gallus

<400> 30
Pro Pro Leu Leu Leu Val Pro Gly Glu Lys Arg His Cys Phe Asp Ala
1 5 10 15
Asn Tyr Asn Pro Gly Tyr Met Tyr Glu Lys Glu Asn Glu Met Met Gln
20 25 30
Thr Arg Met Met Asp Gln Ala Ile Asn Asn Ala Ile Ser Tyr Leu Gly
35 40 45
Ala Glu Ala Val Arg Pro Leu Val Gln Thr Pro Pro Ala Pro Thr Ser
50 55 60
Glu Met Val Pro Val Ile Ser Ser Val Tyr Pro Ile Ala Leu Thr Arg
65 70 75 80
Ala Asp Met Pro Asn Gly Ala Pro Gln Glu Met Glu Lys Lys Arg Ile
85 90 95
Leu Leu Pro Glu Lys Ile Leu Pro Ser Glu Arg Gly Leu Ser Pro Asn
100 105 110
Asn Ser Ala Gln Asp Ser Thr Asp Thr Asp Ser Asn His Glu Asp Arg
115 120 125
Gln His Leu Tyr Gln Gln Ser His Val Val Leu Pro Gln Ala Arg Asn
130 135 140
Gly Met Pro Leu Leu Lys Glu Val Pro Arg Ser Phe Glu Leu Leu Lys
145 150 155 160
Pro Pro Pro Ile Cys Leu Arg Asp Ser Ile Lys Val Ile Asn Lys Glu

				165					170					175			
Gly	Glu	Val	Met	Asp	Val	Phe	Arg	Cys	Asp	His	Cys	His	Val	Leu	Phe		
			180					185					190				
Leu	Asp	Tyr	Val	Met	Phe	Thr	Ile	His	Met	Gly	Cys	His	Gly	Phe	Arg		
		195					200					205					
Asp	Pro	Phe	Glu	Cys	Asn	Met	Cys	Gly	Tyr	Arg	Ser	His	Asp	Arg	Tyr		
	210					215					220						
Glu	Phe	Ser	Ser	His	Ile	Ala	Arg	Gly	Glu	His	Arg	Ala	Met	Leu	Lys		
225					230					235					240		

<210> 31
 <211> 232
 <212> PRT
 <213> Gallus gallus

<400> 31

Asp	Arg	Leu	Asp	Leu	Pro	Tyr	Asp	Ala	Thr	Thr	Asn	Tyr	Glu	Lys	Glu		
1				5					10					15			
Asn	Glu	Ile	Met	Gln	Thr	His	Val	Ile	Asp	Gln	Ala	Ile	Asn	Asn	Ala		
			20					25					30				
Ile	Ser	Tyr	Leu	Gly	Ala	Glu	Ser	Leu	Arg	Pro	Leu	Val	Gln	Thr	Pro		
		35					40					45					
Pro	Val	Gly	Ser	Glu	Val	Val	Pro	Val	Ile	Ser	Pro	Met	Tyr	Gln	Leu		
	50					55					60						
His	Lys	Pro	His	Gly	Asp	Asn	Gln	Thr	Arg	Ser	Asn	His	Thr	Ala	Gln		
65					70					75					80		
Asp	Ser	Ala	Val	Glu	Asn	Leu	Leu	Leu	Leu	Ser	Lys	Ala	Lys	Ser	Val		
				85					90				95				
Ser	Ser	Glu	Arg	Asp	Ala	Ser	Pro	Ser	Asn	Ser	Cys	Gln	Asp	Ser	Thr		
			100					105					110				
Asp	Thr	Glu	Ser	Asn	Asn	Glu	Glu	Arg	Ser	Gly	Leu	Ile	Tyr	Leu	Thr		
		115					120					125					
Asn	His	Ile	Gly	Pro	His	Ala	Arg	Asn	Gly	Ile	Ser	Val	Lys	Glu	Glu		
	130					135					140						
Ser	Arg	Gln	Phe	Asp	Val	Leu	Arg	Ala	Gly	Thr	Asp	Asn	Ser	Gln	Asp		
145					150					155					160		
Ala	Phe	Lys	Val	Ile	Ser	Ser	Asn	Gly	Glu	Gln	Val	Arg	Val	Tyr	Lys		
				165				170					175				
Cys	Glu	His	Cys	Arg	Val	Leu	Phe	Leu	Asp	His	Val	Met	Tyr	Thr	Ile		
			180					185					190				
His	Met	Gly	Cys	His	Gly	Phe	Arg	Asp	Pro	Phe	Glu	Cys	Asn	Met	Cys		
	195						200					205					
Gly	Tyr	His	Ser	Gln	Asp	Arg	Tyr	Glu	Phe	Ser	Ser	His	Ile	Thr	Arg		
	210					215					220						
Gly	Glu	His	Arg	Phe	His	Met	Ser										
225					230												

<210> 32
 <211> 101
 <212> PRT
 <213> Mus musculus

<400> 32

Ile	Arg	His	Glu	Glu	Ala	Pro	Ala	Asn	Glu	Asp	Glu	Asp	Ala	Gly	Glu		
1				5					10					15			
Asp	Ser	Met	Lys	Val	Lys	Asp	Glu	Tyr	Ser	Asp	Arg	Asp	Glu	Asn	Ile		
			20					25					30				

Met Lys Pro Glu Pro Met Gly Asp Ala Glu Glu Ser Glu Met Pro Tyr
 35 40 45
 Ser Tyr Ala Arg Glu Tyr Ser Asp Tyr Glu Ser Ile Lys Leu Glu Arg
 50 55 60
 His Val Pro Tyr Asp Asn Ser Arg Pro Thr Ser Gly Lys Met Asn Cys
 65 70 75 80
 Asp Val Cys Gly Leu Ser Cys Ile Ser Phe Asn Val Leu Met Val His
 85 90 95
 Lys Arg Ser His Thr
 100

<210> 33
 <211> 56
 <212> PRT
 <213> Mus musculus

<400> 33
 Gly Glu Arg Pro Phe Gln Cys Asn Gln Cys Gly Ala Ser Phe Thr Gln
 1 5 10 15
 Lys Gly Asn Leu Leu Arg His Ile Lys Leu His Thr Gly Glu Lys Pro
 20 25 30
 Phe Lys Cys His Leu Cys Asn Tyr Ala Cys Gln Arg Arg Asp Ala Leu
 35 40 45
 Thr Gly His Leu Arg Thr His Ser
 50 55

<210> 34
 <211> 39
 <212> PRT
 <213> Mus musculus

<400> 34
 Val Glu Lys Pro Tyr Lys Cys Glu Phe Cys Gly Arg Ser Tyr Lys Gln
 1 5 10 15
 Arg Ser Ser Leu Glu Glu His Lys Glu Arg Cys Arg Ala Phe Leu Gln
 20 25 30
 Asn Pro Asp Leu Gly Asp Ala
 35

<210> 35
 <211> 39
 <212> PRT
 <213> Mus musculus

<400> 35
 Ala Ser Val Glu Ala Arg His Ile Lys Ala Glu Met Gly Ser Glu Arg
 1 5 10 15
 Ala Leu Val Leu Asp Arg Leu Ala Ser Asn Val Ala Lys Arg Lys Ser
 20 25 30
 Ser Met Pro Gln Lys Phe Ile
 35

<210> 36
 <211> 233
 <212> PRT
 <213> Mus musculus

<400> 36

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Gly Glu Lys Arg His Cys Phe Asp Ala Asn Tyr Asn Pro Gly Tyr Met
 1              5              10              15
Tyr Glu Lys Glu Asn Glu Met Met Gln Thr Arg Met Met Asp Gln Ala
      20              25              30
Ile Asn Asn Ala Ile Ser Tyr Leu Gly Ala Glu Ala Phe Arg Pro Leu
      35              40              45
Val Gln Thr Pro Pro Ala Pro Thr Ser Glu Met Val Pro Val Ile Ser
      50              55              60
Ser Val Tyr Pro Ile Ala Leu Thr Arg Ala Asp Met Pro Met Gly Ala
      65              70              75              80
Pro Gln Glu Met Glu Lys Lys Arg Ile Leu Leu Pro Glu Lys Ile Leu
      85              90              95
Pro Ser Glu Arg Gly Leu Ser Pro Asn Asn Ser Ala Gln Asp Ser Thr
      100              105              110
Asp Thr Asp Ser Asn His Glu Asp Arg Gln His Leu Tyr Gln Gln Ser
      115              120              125
His Val Val Leu Pro Gln Ala Arg Asn Gly Met Pro Leu Leu Lys Glu
      130              135              140
Val Pro Arg Ser Phe Glu Leu Leu Lys Pro Pro Pro Ile Cys Leu Arg
      145              150              155              160
Asp Ser Ile Lys Val Ile Asn Lys Glu Gly Glu Val Met Asp Val Phe
      165              170              175
Arg Cys Asp His Cys His Val Leu Phe Leu Asp Tyr Val Met Phe Thr
      180              185              190
Ile His Met Gly Cys His Gly Phe Arg Asp Pro Phe Glu Cys Asn Met
      195              200              205
Cys Gly Tyr Arg Ser His Asp Arg Tyr Glu Phe Ser Ser His Ile Ala
      210              215              220
Arg Gly Glu His Arg Ala Met Leu Lys
      225              230

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<210> 37

<211> 208

<212> PRT

<213> Artificial Sequence

<220>

<223> majority sequence

<221> VARIANT

<222> (1)...(208)

<223> Xaa = Any Amino Acid

<400> 37

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Xaa Arg Asp Glu Asn Xaa Xaa Lys Xaa Glu Pro Met Gly Xaa Ala Glu
 1              5              10              15
Glu Xaa Glu Xaa Pro Tyr Ser Tyr Xaa Arg Glu Tyr Xaa Xaa Tyr Glu
      20              25              30
Xaa Ile Lys Leu Glu Arg His Val Xaa Xaa Asp Xaa Ser Arg Pro Thr
      35              40              45
Ser Gly Lys Met Asn Cys Asp Val Cys Gly Leu Ser Cys Ile Ser Phe
      50              55              60
Asn Val Leu Met Val His Lys Arg Ser His Thr Gly Glu Arg Pro Phe
      65              70              75              80
Gln Cys Asn Gln Cys Gly Ala Ser Phe Thr Gln Lys Gly Asn Leu Leu
      85              90              95

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Arg His Ile Lys Leu His Thr Gly Glu Lys Pro Phe Lys Cys His Leu
 100 105 110
 Cys Asn Tyr Ala Cys Gln Arg Arg Asp Ala Leu Thr Gly His Leu Arg
 115 120 125
 Thr His Ser Val Glu Lys Pro Tyr Lys Cys Glu Phe Cys Gly Arg Ser
 130 135 140
 Tyr Lys Gln Arg Ser Ser Leu Glu Glu His Lys Glu Arg Cys Arg Xaa
 145 150 155 160
 Phe Leu Gln Xaa Xaa Asp Xaa Gly Asp Xaa Ala Ser Xaa Glu Ala Arg
 165 170 175
 His Ile Lys Ala Glu Met Gly Ser Glu Arg Ala Leu Val Leu Asp Arg
 180 185 190
 Leu Ala Ser Asn Val Ala Lys Arg Lys Ser Ser Met Pro Gln Lys Phe
 195 200 205

<210> 38
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer for PCR

<400> 38
 atgaaagtga aagatgaata cagc